

2nd Semester (Code-201 Discrete Mathematics)

Unit-1

Set Theory: Introduction, Size of sets and cardinals, Venn diagrams, Combination of sets, Multi sets, Ordered pairs and Set identities.

Relations & Functions: Relations- Definition operations on relations, Composite relations, Properties of relations, Equality of relations, Partial order relation, Functions Definition, Classification of functions, Operations on functions, Recursively defined functions.

Unit-2

Algebraic Structures: Definition, Properties, Types: Semi Groups, Monoid, Groups, Abelian Groups, Subgroups and order, Cyclic Groups, Cosets, Normal Subgroups, Permutation and Symmetric groups, Homomorphisms and homomorphism of Groups Definition and elementary properties of Rings and Fields: definition and standard results.

Unit-3

Lattices: Introduction, Partial order sets, Combination of partial order sets, Hasse diagram, Introduction in Lattices, Properties of lattices-Bounded, Complemented, Modular and Complete lattice.

Unit-4

Propositional & Predicate Logic: Propositions, Truth tables, Tautology, Contradiction, Algebra of Propositions, Theory of Inference and Natural Deduction. Theory of predicates, First order predicate, Predicate formulas, quantifiers, Inference theory of predicate logic.

2nd Semester (Code-202 Financial Accounting & Management)

Unit-1

Overview: Accounting concepts, conventions and principles, Accounting Equation, International Accounting principles and standards, Matching of Indian Accounting Standards with International Accounting Standards.

Unit-2

Mechanics of Accounting: Double entry system of accounting, journalizing of transactions, preparation of final accounts, Profit & Loss Account, Profit & Loss Appropriation account and Balance Sheet, Policies related with depreciation, inventory and intangible assets like copyright, trademark, patents and goodwill.

Unit-3

Analysis of financial statement: Ratio Analysis- solvency ratios, profitability ratios, activity ratios, liquidity ratios, market capitalization ratios, Common Size Statement, Comparative Balance Sheet and Trend Analysis of manufacturing, service & banking organizations.

Unit-4

Funds Flow Statement: Meaning, Concept of Gross and Net Working Capital, Preparation of Schedule of Changes in Working Capital, Preparation of Funds Flow Statement and Its analysis, Cash Flow Statement: Various cash and non-cash transactions, flow of cash, preparation of Cash Flow Statement and it's analysis.

2nd Semester (Code-203 Data Structure Through 'C')

Unit-1

Introduction: Basic Terminology, Elementary Data Organization, Data Structure operations, Algorithm Complexity and Time-Space trade-off.

Arrays: Array Definition, Representation and Analysis, Single and Multidimensional Arrays, address calculation, application of arrays, Character String in C, Character string operation, Array as Parameters, Ordered List, Sparse Matrices, and Vectors.

Stacks: Array Representation and Implementation of stack, Operations on Stacks: Push & Pop, Array Representation of Stack, Linked Representation of Stack, Operations Associated with Stacks, Application of stack: Conversion of Infix to Prefix and Postfix Expressions, Evaluation of postfix expression using stack.

Recursion: Recursive definition and processes, recursion in C, example of recursion, Tower of Hanoi Problem, simulating recursion. Backtracking, recursive algorithms, principles of recursion, tail recursion, removal of recursion.

Unit-2

Queues: Array and linked representation and implementation of queues, Operations on Queue: Create, Add, Delete, Full and Empty. Circular queue, Dequeue, and Priority Queue.

Linked list: Representation and Implementation of Singly Linked Lists, Two-way Header List, Traversing and Searching of Linked List, Overflow and Underflow, Insertion and deletion to/from Linked Lists, Insertion and deletion Algorithms, Doubly linked list, Linked List in Array, Polynomial representation and addition, Generalized linked list, Garbage Collection and Compaction.

Unit-3

Trees: Basic terminology, Binary Trees, Binary tree representation, algebraic Expressions, Complete Binary Tree, Extended Binary Trees, Array and Linked Representation of Binary trees.

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Unit-3

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Searching and Hashing: Sequential search, binary search, comparison and analysis, Hash Table, Hash Functions, Collision Resolution Strategies, Hash Table Implementation.

Unit-4

Sorting: Insertion Sort, Bubble Sorting, Quick Sort, Two Way Merge Sort, Heap Sort, Sorting on Different Keys, Practical consideration for Internal Sorting.

Binary Search Trees: Binary Search Tree (BST), Insertion and Deletion in BST, Complexity of Search Algorithm, Path Length, AVL Trees, B-trees, Hashing Comparisons.

2nd Semester (Code-204 Computer Organization & Architecture)

Unit-1

Basis Computer Architecture, Functional Organization, Register Organization, Arithmetic and Logic Unit, Central Processing unit, Instruction Formats, Addressing Modes. Data Transfer and Manipulation, Interrupts RISC/CISC architecture.

Unit-2

Memory Organization – Memory Hierarchy, Main memory (RAM/ROM chips), Auxillary memory, Associative memory, Cache Memory, Virtual Memory, Memory Management Hardware. hit/miss ratio, magnetic disk and Its Performance, magnetic Tape, etc.

Unit-3

I/O Organization – Peripheral devices, /O interface, Modes of Transfer, Priority Interrupt, Direct Memory Access, Input-Output Processor, and Serial Communication. I/O Controllers, Asynchronous data transfer, Strobe Control, Handshaking.

Unit-4

Process Organization – Basic Concept of 8-bit micro Processor (8085) and 16-bit Micro Processor (8086). Assembly Instruction Set, Assembly language program of (8085): Addition of two numbers, Subtraction, Block Transfer, find greatest number, Table search, Numeric Manipulation, Introductory Concept of pipeline, Flynn's and Feng's Classification, Parallel Architectural classification.

2nd Semester (Code-205 Elements of Statistics)

Unit-1

Population, Sample and Data Condensation: Definition and scope of statistics, concept of population and sample with Illustration, Raw data, attributes and variables, classification, frequency distribution, Cumulative frequency distribution.

Unit-2

Measures of Central Tendency Concept of central Tendency, requirements of a good measures of central tendency, Arithmetic mean, Median, Mode, Harmonic Mean, Geometric mean for grouped and ungrouped data.

Unit-3

Measures of Dispersion: Concept of dispersion, Absolute and relative measure of dispersion, range variance, Standard deviation, Coefficient of variation. Permutations and Combinations: Permutations of 'n' dissimilar objects taken 'r' at a time (with or without repetitions), $nPr = n!/(n-r)!$ (without proof), Combinations of 'r' objects taken from 'n' objects, $nCr = n!/(r!(n-r)!)$ (without proof), Simple examples, Applications.

Unit-4

Sample space, Events and Probability: Experiments and random experiments, Ideas of deterministic and non-deterministic experiments, Definition of sample space, discrete sample space, events, Types of events, Union and Intersections of two or more events, mutually exclusive events, Complementary event, Exhaustive event, Simple examples.

Classical definition of probability, Addition theorem of probability without Proof (upto three events are expected), Definition of conditional probability, Definition of independence of two events, simple numerical problems.

Statistical Quality Control Introduction, control limits, specification limits, tolerance limits, process and product control, Control charts for X and R, Control charts for number of defective (n-p chart) control charts for number of defects (c- chart).